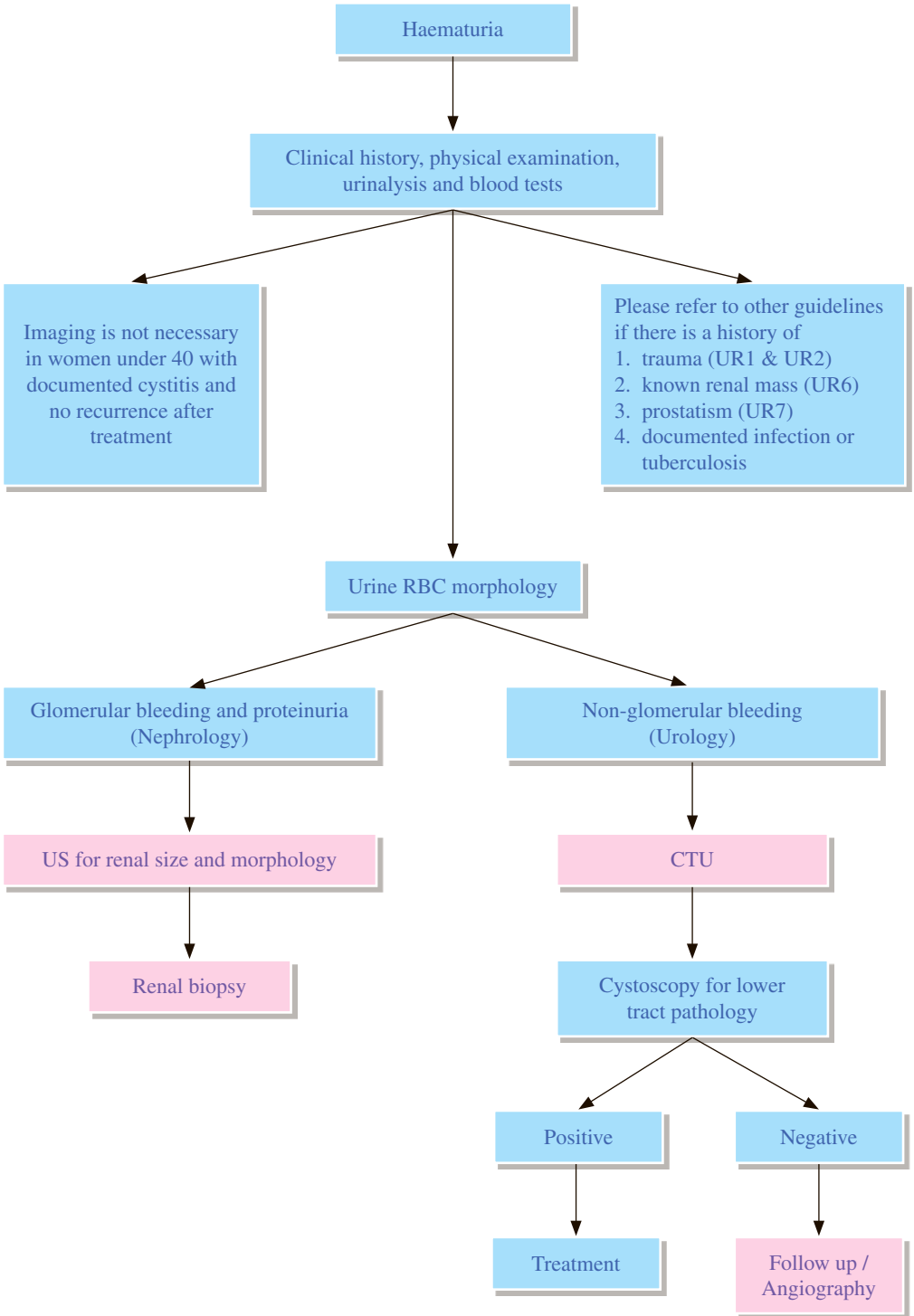
Haematuria
Clinical history, physical examination, urinalysis and blood tests
Imaging is not necessary in women under 40 with documented cystitis and no recurrence after treatment
Please refer to other guidelines if there is a history of
1. trauma (UR1 & UR2)
2. known renal mass (UR6)
3. prostatism (UR7)
4. documented infection or tuberculosis
Urine RBC morphology
Glomerular bleeding and proteinuria (Nephrology)
Non-glomerular bleeding (Urology)
US for renal size and morphology
CTU
Renal biopsy
Cystoscopy for lower tract pathology
Positive
Negative
Treatment
Follow up / Angiography

REMARKS

1 General

1.1 Haematuria can originate from any site in the urinary tract and be due to a wide range of causes, which can be roughly divided into renal, urothelial, or prostatic causes. Thorough evaluation of gross haematuria is recommended, and this is usually done with a combination of clinical examination, cystoscopic evaluation, and urinary tract imaging.

1.2 Patients on anticoagulants who present with gross or microscopic haematuria have a sufficiently high prevalence of important disease including tumours such that workup cannot be forgone.

1.3 In comparison to gross haematuria, the situation is somewhat different in patients with microscopic haematuria. The recommended definition of microscopic haematuria is three or more red blood cells per high-power field on microscopic evaluation of urinary sediment from two of three properly collected urinalysis specimens.

1.4 Young women with a clinical picture of simple cystitis, and other patients whose haematuria completely and permanently resolves after successful therapy, are unlikely to benefit from any imaging.

2 Intravenous urogram (IVU)

2.1 IVU has low sensitivity for detecting renal masses <2–3 cm in size, and even if a mass is visualized, further cross sectional studies such as US, CT, or MRI are then necessary to characterize the mass.

3 Retrograde pyelography

3.1 Retrograde pyelography does not rely on renal excretion of intravascular contrast. In patients with impaired renal function, or contraindications to computed tomography urogram (CTU) or magnetic resonance urogram (MRU), or suboptimal CTU or MRU, a retrograde pyelography may be a reasonable adjunct to cystoscopy in patients with suspected upper tract lesions.

4 US

4.1 US still has a role in the initial workup of haematuria to search for bleeding urinary tract lesions. It is especially useful in radiation-sensitive populations, such as children and pregnant or child-bearing age women, to detect renal calculi and renal masses.

4.2 In patients in whom glomerular disease is the cause of haematuria, US can examine the renal parenchyma and follow disease progression. US can evaluate renal length, echogenicity, cortical thickness, and parenchymal thickness.

5 CT

5.1 Numerous studies have established that CTU is superior to IVU for detecting upper tract urothelial lesions in patients with haematuria. In a meta-analysis, CTU was proved to be a very sensitive and specific method for the detection of urothelial malignancy with pooled sensitivity of 96% and pooled specificity of 99%, and was superior in direct comparison to IVU in terms of sensitivity and specificity.

6 Cystoscopy

6.1 Cystoscopy is still considered to be the optimal technique to detect the plaque-like lesions of early bladder cancers, although newer studies suggest that a properly performed CTU in an adequately distended bladder is quite sensitive in detecting bladder cancer. Patients with no bladder abnormality on CTU can proceed to office cystoscopy, while those with a suspected bladder neoplasm can undergo cystoscopy in the operating room with intent to biopsy.

7 Angiography

7.1 Rarely, vascular disorders such as aneurysms, arteriovenous malformations or obstruction of a calyx from overlying artery (Fraley's syndrome) may result in haematuria. In these suspected situations, catheter angiography may be useful for diagnosis and for therapeutic interventions.

8 MRI

8.1 MRI is an excellent technique to evaluate the renal parenchyma for masses and other abnormalities; it is inferior to CTU and IVU in detection of small stones and urothelial lesions.

9 Pathological diagnosis

9.1 Renal biopsy should be performed for cases suspected to have glomerulonephritis.

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